

Review of Geographic Factors related to UIC Permit Issuance  
January 21, 2015

Applicant	Michigan Potash Operating, LLC
Well Name	MPC 1D
Permit Writer	Allan Batka
Permit No.	MI-133-11-0004
Latitude/Longitude	43.825947, -85.323008 (based on applicant's data), Osceola County
Coastal Zone Management Area	The site is not within the Michigan/Indiana Coastal Zone Management Area.
EJ	EJSCREEN: Low Income Population is 44%.
Field Rules?	Not applicable
Public notice map	g:/UIC/Technical/Permits/Maps/133i0004,5,6.gif
Traverse USDW?	This site is not in the area in Michigan in which the Traverse Limestone can be an Underground Source of Drinking Water.
Tribal land?	There are no federally-recognized tribal lands in Osceola Co.
WHPA?	The site is approximately 0.25 mi from the Kalium Chemicals Type 2 Provisional WHPA.
Wild & Scenic River?	There are no federally-recognized Wild & Scenic Rivers in Osceola County.
UIC Permit Applications webpage	Sent to R5 web support January 21, 2015.

INFO GENERATED BY STEVE ROY

## EJSCREEN Report

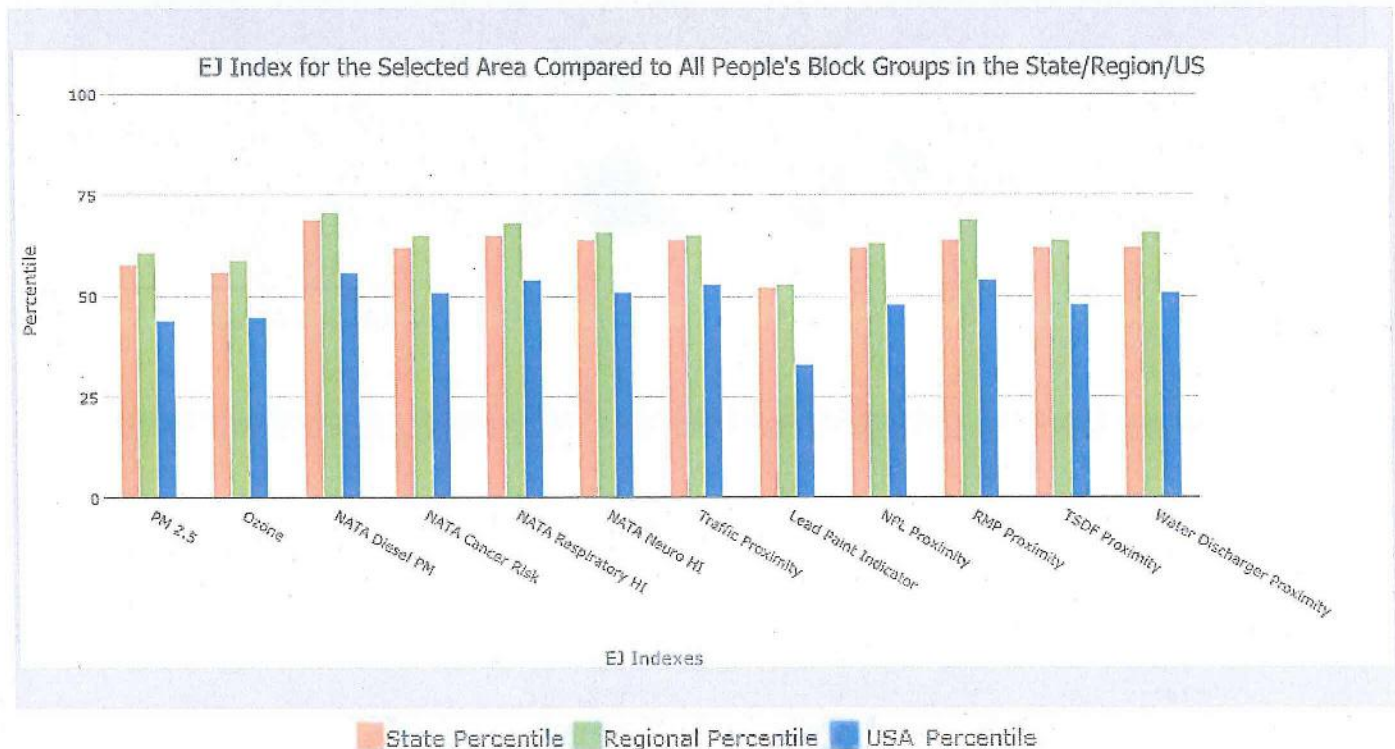


for 3 mile Ring Centered at 43.825947, -85.323008, MICHIGAN, EPA Region 5

Approximate Population: 737

MI-133-11-0004

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	58	61	44
EJ Index for Ozone	56	59	45
EJ Index for NATA Diesel PM	69	71	56
EJ Index for NATA Air Toxics Cancer Risk	62	65	51
EJ Index for NATA Respiratory Hazard Index	65	68	54
EJ Index for NATA Neurological Hazard Index	64	66	51
EJ Index for Traffic Proximity and Volume	64	65	53
EJ Index for Lead Paint Indicator	52	53	33
EJ Index for Proximity to NPL sites	62	63	48
EJ Index for Proximity to RMP sites	64	69	54
EJ Index for Proximity to TSDFs	62	64	48
EJ Index for Proximity to Major Direct Dischargers	62	66	51



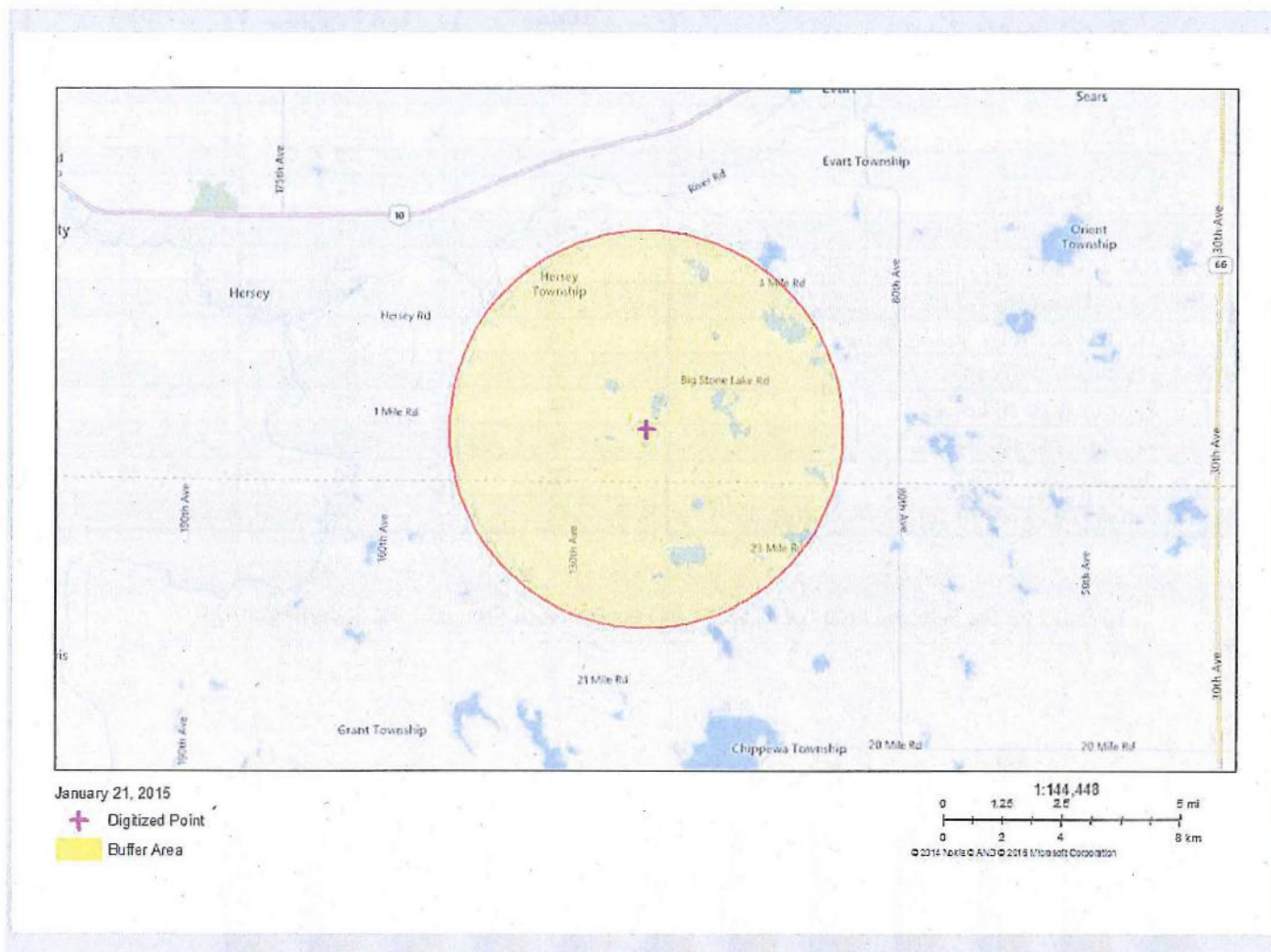
This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.



for 3 mile Ring Centered at 43.825947,-85.323008, MICHIGAN, EPA Region 5

Approximate Population: 737

MI-133-1I-0004



## EJSCREEN Report



for 3 mile Ring Centered at 43.825947,-85.323008, MICHIGAN, EPA Region 5

Approximate Population: 737

MI-133-11-0004

Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	10.7	12.9	9	13.3	4	10.7	49
Ozone (ppb)	42.7	44.6	11	45	30	46.3	28
NATA Diesel PM ( $\mu\text{g}/\text{m}^3$ )*	0.026	0.727	2	0.712	<50th	0.824	<50th
NATA Cancer Risk (lifetime risk per million)*	21	43	4	42	<50th	49	<50th
NATA Respiratory Hazard Index*	0.4	1.5	4	1.5	<50th	2.3	<50th
NATA Neurological Hazard Index*	0.022	0.058	2	0.067	<50th	0.063	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	3.4	79	12	69	11	110	8
Lead Paint Indicator (% Pre-1960 Housing)	0.19	0.39	33	0.39	32	0.3	48
NPL Proximity (site count/km distance)	0.018	0.095	10	0.085	15	0.096	20
RMP Proximity (facility count/km distance)	0.03	0.21	8	0.33	3	0.31	5
TSDF Proximity (facility count/km distance)	0.0077	0.063	10	0.051	13	0.054	20
Water Discharger Proximity (facility count/km distance)	0.04	0.19	10	0.23	7	0.25	7
<b>Demographic Indicators</b>							
Demographic Index	24%	29%	54	28%	57	35%	40
Minority Population	4%	23%	18	24%	22	36%	11
Low Income Population	44%	35%	69	32%	73	34%	70
Linguistically Isolated Population	0%	2%	63	3%	59	5%	45
Population With Less Than High School Education	12%	12%	60	12%	60	15%	52
Population Under 5 years of age	5%	6%	37	6%	34	7%	33
Population over 64 years of age	19%	14%	79	13%	80	13%	80

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <http://www.epa.gov/ttn/atw/natamain/index.html>.

For additional information, see: [www.epa.gov/environmentaljustice](http://www.epa.gov/environmentaljustice)

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Review of Geographic Factors related to UIC Permit Issuance  
January 21, 2015

Applicant	Michigan Potash Operating, LLC
Well Name	MPC 2D
Permit Writer	Allan Batka
Permit No.	MI-133-II-0005
Latitude/Longitude	43.825948, -85.322932 (based on applicant's data), Osceola County
Coastal Zone Management Area	The site is not within the Michigan/Indiana Coastal Zone Management Area.
EJ	EJSCREEN: Low Income Population is 44%.
Field Rules?	Not applicable
Public notice map	g:/UIC/Technical/Permits/Maps/133i0004,5,6.gif
Traverse USDW?	This site is not in the area in Michigan in which the Traverse Limestone can be an Underground Source of Drinking Water.
Tribal land?	There are no federally-recognized tribal lands in Osceola Co.
WHPA?	The site is approximately 0.6 mi from the Kalium Chemicals Type 2 Provisional WHPA.
Wild & Scenic River?	There are no federally-recognized Wild & Scenic Rivers in Osceola County.
UIC Permit Applications webpage	Sent to R5 web support January 21, 2015.

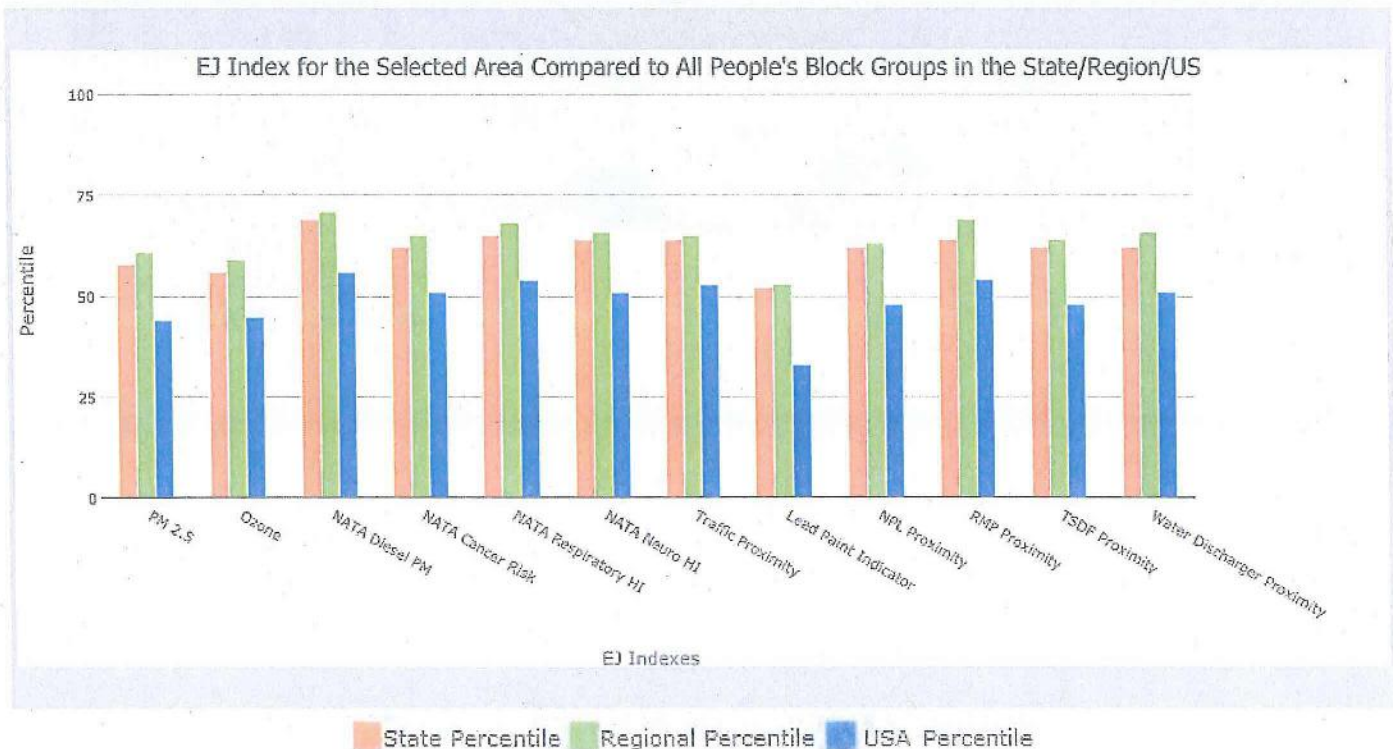
INFO GENERATED BY STEVE ROY

for 3 mile Ring Centered at 43.825948, -85.322932, MICHIGAN, EPA Region 5

Approximate Population: 737

MI-133-1I-0005

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	58	61	44
EJ Index for Ozone	56	59	45
EJ Index for NATA Diesel PM	69	71	56
EJ Index for NATA Air Toxics Cancer Risk	62	65	51
EJ Index for NATA Respiratory Hazard Index	65	68	54
EJ Index for NATA Neurological Hazard Index	64	66	51
EJ Index for Traffic Proximity and Volume	64	65	53
EJ Index for Lead Paint Indicator	52	53	33
EJ Index for Proximity to NPL sites	62	63	48
EJ Index for Proximity to RMP sites	64	69	54
EJ Index for Proximity to TSDFs	62	64	48
EJ Index for Proximity to Major Direct Dischargers	62	66	51



This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.



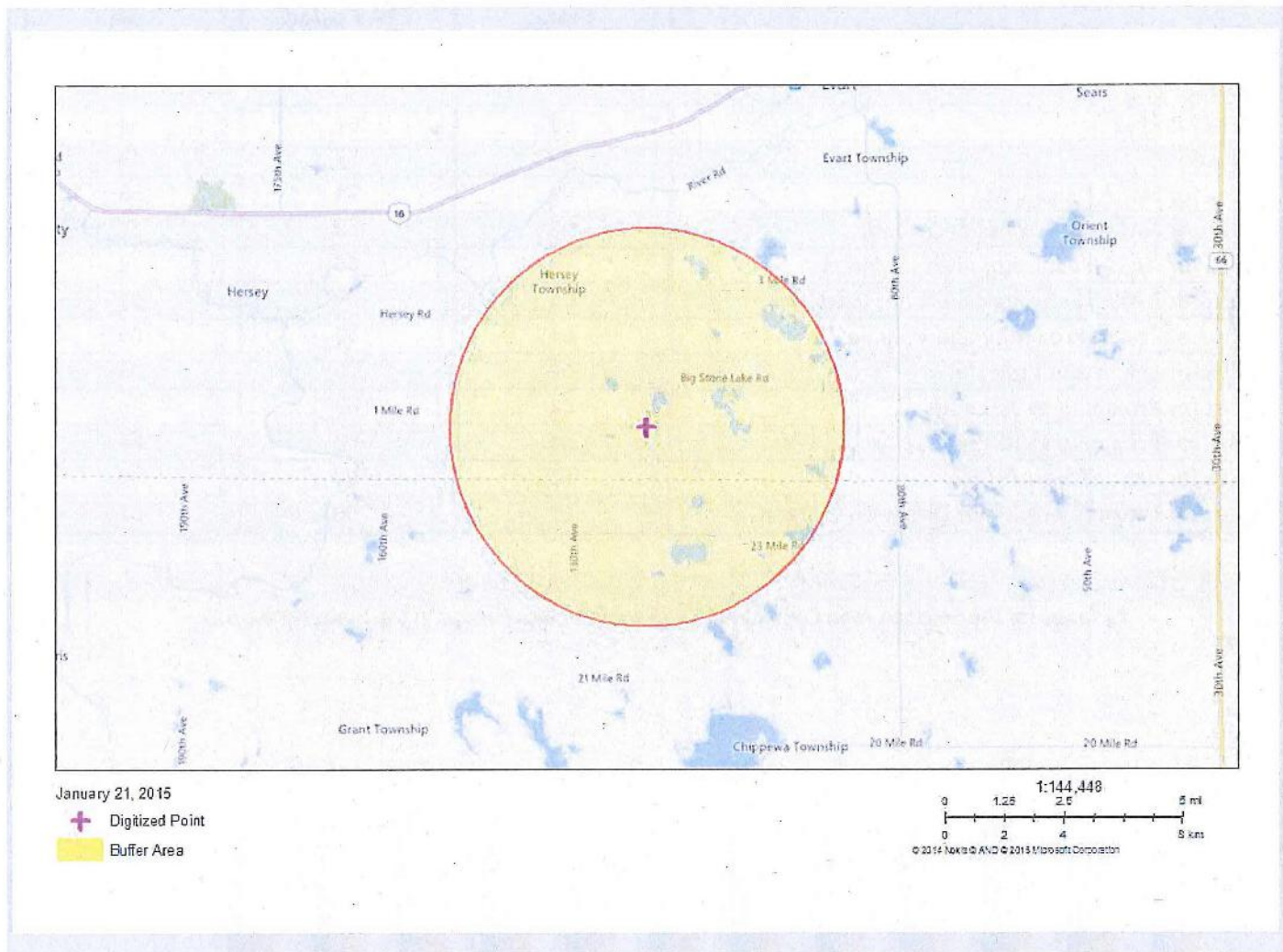
## EJSCREEN Report



for 3 mile Ring Centered at 43.825948,-85.322932, MICHIGAN, EPA Region 5

Approximate Population: 737

MI-133-11-0005



## EJSCREEN Report



for 3 mile Ring Centered at 43.825948,-85.322932, MICHIGAN, EPA Region 5

Approximate Population: 737

MI-133-11-0005

Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	10.7	12.9	9	13.3	4	10.7	49
Ozone (ppb)	42.7	44.6	11	45	30	46.3	28
NATA Diesel PM ( $\mu\text{g}/\text{m}^3$ )*	0.026	0.727	2	0.712	<50th	0.824	<50th
NATA Cancer Risk (lifetime risk per million)*	21	43	4	42	<50th	49	<50th
NATA Respiratory Hazard Index*	0.4	1.5	4	1.5	<50th	2.3	<50th
NATA Neurological Hazard Index*	0.022	0.058	2	0.067	<50th	0.063	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	3.4	79	12	69	11	110	8
Lead Paint Indicator (% Pre-1960 Housing)	0.19	0.39	33	0.39	32	0.3	48
NPL Proximity (site count/km distance)	0.018	0.095	10	0.085	15	0.096	20
RMP Proximity (facility count/km distance)	0.03	0.21	8	0.33	3	0.31	5
TSDF Proximity (facility count/km distance)	0.0077	0.063	10	0.051	13	0.054	20
Water Discharger Proximity (facility count/km distance)	0.04	0.19	10	0.23	7	0.25	7
<b>Demographic Indicators</b>							
Demographic Index	24%	29%	54	28%	57	35%	40
Minority Population	4%	23%	18	24%	22	36%	11
Low Income Population	44%	35%	69	32%	73	34%	70
Linguistically Isolated Population	0%	2%	63	3%	59	5%	45
Population With Less Than High School Education	12%	12%	60	12%	60	15%	52
Population Under 5 years of age	5%	6%	37	6%	34	7%	33
Population over 64 years of age	19%	14%	79	13%	80	13%	80

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <http://www.epa.gov/ttn/atw/natamain/index.html>.

For additional information, see: [www.epa.gov/environmentaljustice](http://www.epa.gov/environmentaljustice)

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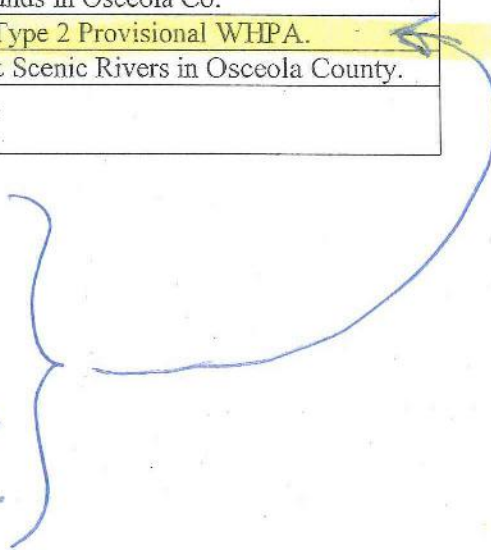
Review of Geographic Factors related to UIC Permit Issuance  
January 21, 2015

Applicant	Michigan Potash Operating, LLC
Well Name	MPC 2B 30
Permit Writer	Allan Batka
Permit No.	MI-133-II-0006
Latitude/Longitude	43.818448, -85.326073 (based on applicant's data), Osceola County
Coastal Zone Management Area	The site is not within the Michigan/Indiana Coastal Zone Management Area.
EJ	EJSCREEN: Low Income Population is 43%.
Field Rules?	Not applicable
Public notice map	g:/UIC/Technical/Permits/Maps/133i0004,5,6.gif
Traverse USDW?	This site is not in the area in Michigan in which the Traverse Limestone can be an Underground Source of Drinking Water.
Tribal land?	There are no federally-recognized tribal lands in Osceola Co.
WHPA?	The site is within the Kalium Chemicals Type 2 Provisional WHPA.
Wild & Scenic River?	There are no federally-recognized Wild & Scenic Rivers in Osceola County.
UIC Permit Applications webpage	Sent to R5 web support January 21, 2015.

INFO GENERATED BY STEVE ROY

AND DOES NOT AGREE W/

WELL SITE INFORMATION AVAILABLE  
ON MDEQ GEOWEBFACE WEB SITE.

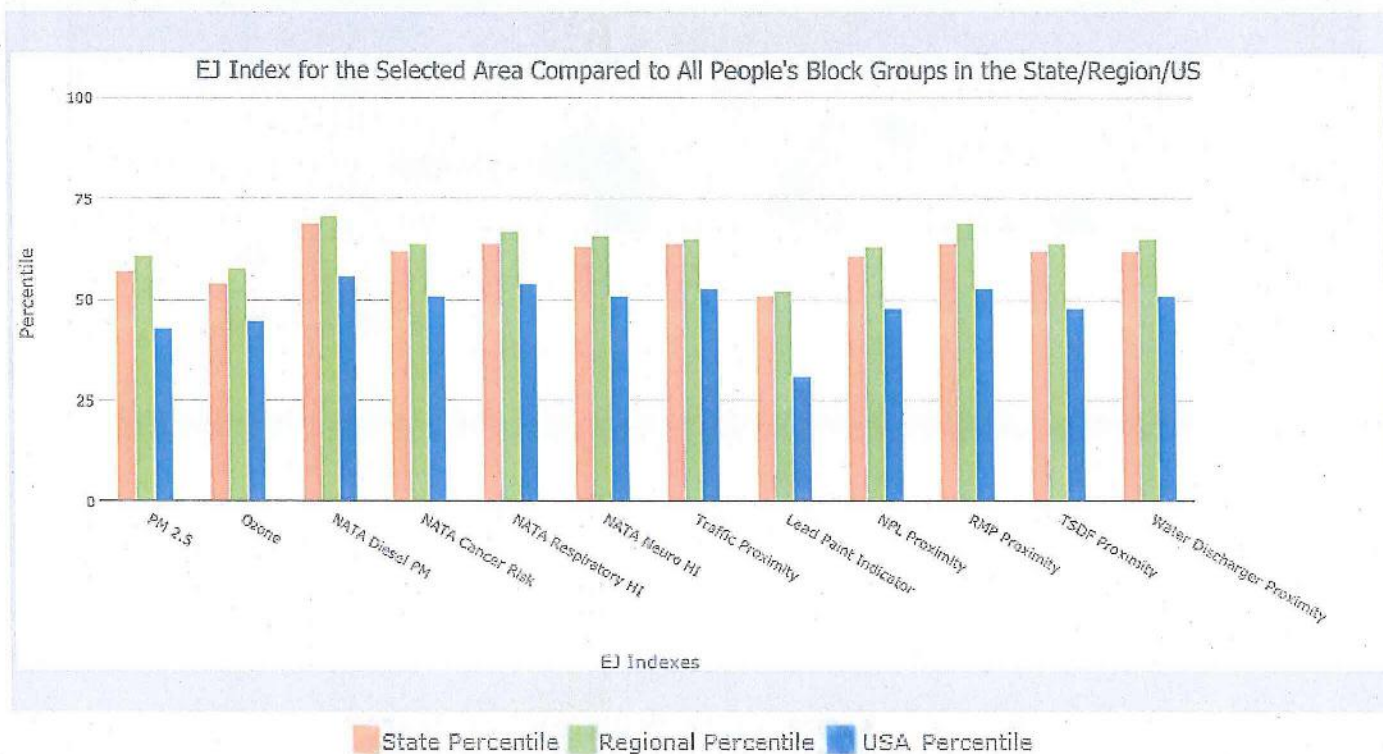


for 3 mile Ring Centered at 43.818448,-85.326073, MICHIGAN, EPA Region 5

Approximate Population: 651

MI-133-11-0006

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	57	61	43
EJ Index for Ozone	54	58	45
EJ Index for NATA Diesel PM	69	71	56
EJ Index for NATA Air Toxics Cancer Risk	62	64	51
EJ Index for NATA Respiratory Hazard Index	64	67	54
EJ Index for NATA Neurological Hazard Index	63	66	51
EJ Index for Traffic Proximity and Volume	64	65	53
EJ Index for Lead Paint Indicator	51	52	31
EJ Index for Proximity to NPL sites	61	63	48
EJ Index for Proximity to RMP sites	64	69	53
EJ Index for Proximity to TSDFs	62	64	48
EJ Index for Proximity to Major Direct Dischargers	62	65	51



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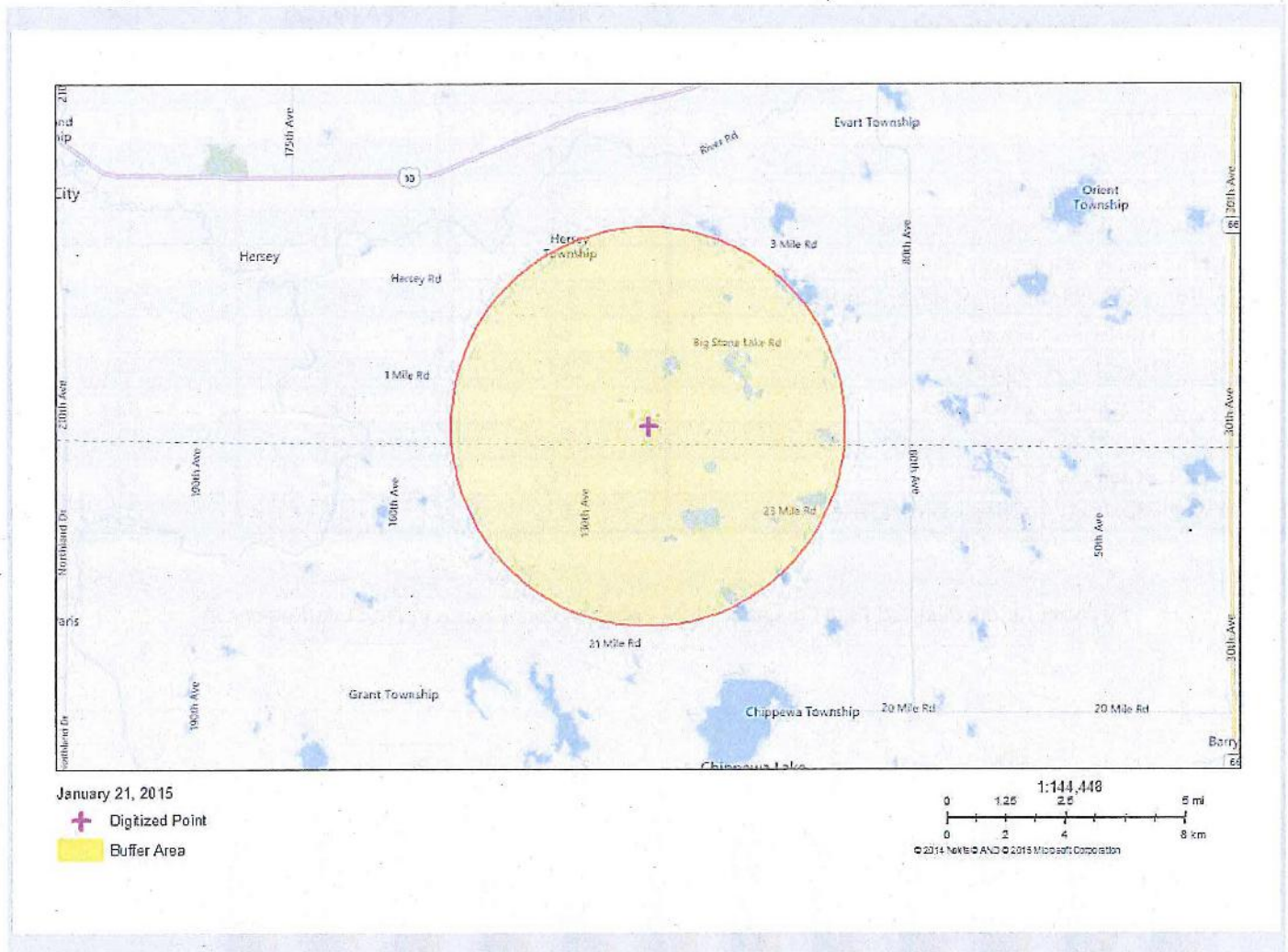
# EJSCREEN Report



for 3 mile Ring Centered at 43.818448,-85.326073, MICHIGAN, EPA Region 5

Approximate Population: 651

MI-133-11-0006





## EJSCREEN Report

for 3 mile Ring Centered at 43.818448,-85.326073, MICHIGAN, EPA Region 5

Approximate Population: 651

MI-133-11-0006



Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	10.7	12.9	9	13.3	4	10.7	49
Ozone (ppb)	42.7	44.6	11	45	30	46.3	28
NATA Diesel PM ( $\mu\text{g}/\text{m}^3$ )*	0.0261	0.727	2	0.712	<50th	0.824	<50th
NATA Cancer Risk (lifetime risk per million)*	21	43	4	42	<50th	49	<50th
NATA Respiratory Hazard Index*	0.4	1.5	4	1.5	<50th	2.3	<50th
NATA Neurological Hazard Index*	0.022	0.058	3	0.067	<50th	0.063	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	3.3	79	12	69	11	110	8
Lead Paint Indicator (% Pre-1960 Housing)	0.2	0.39	34	0.39	34	0.3	49
NPL Proximity (site count/km distance)	0.018	0.095	10	0.085	15	0.096	20
RMP Proximity (facility count/km distance)	0.03	0.21	8	0.33	3	0.31	5
TSDF Proximity (facility count/km distance)	0.0077	0.063	10	0.051	13	0.054	20
Water Discharger Proximity (facility count/km distance)	0.041	0.19	11	0.23	7	0.25	8
<b>Demographic Indicators</b>							
Demographic Index	23%	29%	53	28%	56	35%	40
Minority Population	4%	23%	18	24%	22	36%	11
Low Income Population	43%	35%	68	32%	72	34%	68
Linguistically Isolated Population	0%	2%	64	3%	59	5%	45
Population With Less Than High School Education	11%	12%	59	12%	59	15%	51
Population Under 5 years of age	4%	6%	33	6%	30	7%	29
Population over 64 years of age	19%	14%	80	13%	80	13%	81

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